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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TAKAOKA, DEAN O

ART UNIT PAPER NUMBER

2817

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/729,682

Applicant(s)

HILAL ET AL.

Examiner

Dean O. Takaoka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-19 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-15 is/are rejected.
- 7) ☒ Claim(s) 4 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 3, 6, 8, 9, 11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by D'Oro (US 5,243,305).

Claim 1.

D'Oro shows a directional distributed coupler comprising: a first conductive line (La or Lp where either line may be named the first or second but for consistency where La will be named as the first line while not excluding Lp) carrying a main signal between two end terminals (Pa, Pd); a second conductive line (Lp) coupled to the first conductive line, the second line comprising a first terminal and a second terminal (Pi, Pu) between which flows a sampled signal, proportional to the main signal, the second conductive line being coupled to the first conductive line such that the first terminal provides a first signal that is a function of a magnitude of the main signal flowing in a first direction on the first conductive line, and the second terminal provides a second signal that is a function of a magnitude of the main signal flowing in a second direction on the first conductive line (Wi, Wr et al.); and a first capacitor (AL1) coupled to the two end terminals of the first conductive line (where the term "coupled" is broad; where AL1 is coupled to transmission line La, thus also coupled to both end terminals) and a second

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capacitor (AL2) coupled to the two terminals of the second conductive line (for the same reasons as AL1).

Claim 2.

Wherein the lines have a same length (shown).

Claim 3.

Wherein the capacitors have same values (where the pad size of the capacitors are the same – Fig. 5; and where cross-sectional view of the capacitance plate distance is also the same – Fig. 5B; thus inherently having the same value).

Claim 6.

Wherein at least one capacitor electrode is formed in a same metallization level as the first conductive line (Fig. 5A where capacitor pads P1, P2 are adjacent conductive lines L'a and L'p).

Claim 8.

A distributed coupler, comprising: a first conductive line (La) that carries a signal between a first terminal and a second terminal (Pa, Pd)); a first capacitor (AL1) connected to the first terminal and the second terminal (e.g. electrically coupled or connected); and a second conductive line (Lp) comprising a third terminal and a fourth terminal (Pi, Pu), the second conductive line being coupled to the first conductive line such that the third terminal provides a first coupled signal that is a function of a magnitude of the signal flowing in a first direction on the first conductive line, and a fourth terminal provides a second coupled signal that is a function of a magnitude of the

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signal flowing in a second direction on the first conductive line (discussed in the reasons of rejection above).

Claim 9.

Further comprising a second capacitor (AL2) connected to the third terminal and the fourth terminal (e.g. electrically coupled or connected).

Claim 11.

Wherein at least one capacitor electrode is formed in a same metallization level in which is formed the first conductive line (Fig. 5A where capacitor pads P1, P2 are adjacent conductive lines L'a and L'p).

Claim 14.

Wherein a central frequency of the directional distributed coupler is between a few tens of MHZ and a few tens of GHz (c1, Ins 11 – 13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 7, 10, 12, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Oro in view of Shumovich (US 6,825,738).

D'Oro shows the coupler above but does not show interleaved lines, specific circuit implementations such as being connected to an antenna, amplifier or control circuit, or specific frequency and capacitor values.

Shumovich also shows a coupler further comprising a well-known circuit connected to an antenna, amplifier and power detector control circuit (Fig. 1) and interleaved lines (170, 172 – Fig. 5), specific frequency and capacitor values (c4, Ins 22) and directivity values (c5, table).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the circuit disclosed by D'Oro with the circuit connection of Shumovich. Such a modification would have been obvious where circuit of Shumovich would have provided a practical implementation of the device of D'Oro; where Shumovich teaches high frequency GHz applications (c1, In 25); and where Shumovich shows a most nearly identical coupler structure (Fig. 3); thus suggesting the obviousness of the modification.

Response to Arguments

Applicant's arguments, see pages 5 and 6, filed August 8, 2006, with respect to the rejection(s) of claim(s) under Ojha and/or Podell, Shumovich have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of D'Oro and D'Oro in view of Shumovich above.

Allowable Subject Matter

Claims 16 – 19 are allowed.

D'Oro shows a distributor coupler but not teach or suggest where the conductive lines are sized in $\lambda/4$ for a central frequency greater than a frequency band for which the distributed coupled is intended. D'Oro teaches away from the limitation where the

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length of either line is shortened to less than $\lambda/4$ by increasing the capacitive coupling to restore the optimal coupling (c2, lns 52-57), thus the claims are allowed.

Claims 4 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Dean Takada". The signature is fluid and cursive, with the first name "Dean" and the last name "Takada" clearly distinguishable.

dot

November 3, 2006